GITAM (Deemed to be University)

GST/GSS/GSB/GSHSS Degree Examination
V Semester
CSEN2061 : DATABASE MANAGEMENT SYSTEMS

Time: 2 Hours **Max. Marks: 30**

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Instruction: All parts of the unit must be answered in one place only.

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Section - A

1. **Answer all questions** (5x1=05)

a. List any two advantages of DBMS.

b. With an example, explain how to translate weak entity set to relational table.

c. Explain the differences between the NATURAL JOIN operation and the CARTESIAN PRODUCT followed by a SELECTION in relational algebra.

d. State and give the example for Join Dependency.

e. Name one technique to prevent deadlocks in a DBMS.

Section - B

Answer the following (5x5=25)

UNIT - I

2. Consider the below schema, Department(dept_name,building,budget) Student(roll_no,name,dept_name,age) Take some of the records for both the tables and demonstrate the use of multi-table clustering file organization.

OR

3. A student is trying to create a relational data model. Help him by explaining various rules to create it.

UNIT - II

4. How can you update data through a view in DBMS? Explain with an example.

OR

5. Suppose that we have a ternary relationship R between entity sets A, B, and C such that A has a key constraint and total participation and B has a key constraint; these are the only constraints. A has attributes a1 and a2, with a1 being the key; B and C are similar. R has no descriptive attributes. Write SQL statements that create tables corresponding to this information so as to capture as many of the constraints as possible. If you cannot capture some constraint, explain why?

UNIT - III

6. Construct a PL/SQL block to calculate the area of a circle and add values in areas table.

OR

7. Apply the principles of database design to interpret the following schema: • Table 1: Undergraduate_Students o Columns: StudentID, Name, Major • Table 2: Graduate_Students o Columns: StudentID, Name, Major Write SQL queries using UNION ALL, INTERSECT, and MINUS set operators to perform the following tasks:
1. UNION ALL: Write a query to list all students (both undergraduate and graduate), including any duplicates.
2. INTERSECT: Write a query to find the students who are enrolled in both undergraduate and graduate programs.
3. MINUS: Write a query to list the students who are enrolled as undergraduates but not as graduates.

UNIT - IV

8. If set of FD's in the relation R(ABC) are F = {A -> B, A ->C}, G = {A -> B, B -> C}, check whether F and G are equivalent.

OR

9. In a university database, each course has only one instructor, and each instructor can teach multiple courses. How does this relationship reflect functional dependency? How would you design the schema to capture this relationship without redundancy?

UNIT - V

10. Consider the following schedule: T1: R(X), T2: R(Y), T3: R(Z), T1: W(Z), T2: W(Y), T3: R(X). How many conflicts serializable schedules are possible for the above schedule? Give reason.

OR

11. State the advantange of interleaved concurrency mode of transcation over serial. Find out the conflict pairs of operations that has to be addressed for parallel mode of execution with suitable example.